

*Please provide the following information, and submit to the NOAA DM Plan Repository.*

**Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

**1. General Description of Data to be Managed****1.1. Name of the Data, data collection Project, or data-producing Program:**

Integrated ecosystem assessment of Vieques, Puerto Rico Fish Assessment and Monitoring Data

**1.2. Summary description of the data:**

This fish and benthic composition database is the result of a multifaceted effort described below. The National Oceanic and Atmospheric Administration's (NOAA) Biogeography Branch, in consultation with NOAA's Office of Response and Restoration (ORandR) and other local and regional experts, is conducting an ecological characterization of the marine ecosystem around Vieques Island, Puerto Rico. The assessment will support effective management and conservation of marine resources in Vieques as a whole. To date a spatially comprehensive assessment of coral reef and hardbottom habitat around Vieques has been lacking. To fill this gap, the Biogeography Branch is expanding long term monitoring efforts to Vieques to collect detailed information about the benthic habitats, fish, and invertebrate communities. Spatially comprehensive information on reefs and hardbottom is vital to future management of the marine resources around Vieques. The collected data will be used to quantify the abundance and spatial distribution of fish, corals, and benthic invertebrates on hardbottom habitats around Vieques. Further, with regular monitoring, changes in the composition and condition of Vieques reefs over time can be detected. Data is collected using established protocols and monitoring efforts consistent with NOAA's National Coral Reef Monitoring Program and the Biogeography Branch's long-term monitoring efforts in southwest Puerto Rico and the US Virgin Islands since 2000 and 2001, respectively. The intent of this work is: 1) To spatially characterize and monitor the distribution, abundance, and size of both reef fishes and macro-invertebrates (conch, lobster, *Diadema*); 2) To relate this information to in-situ data collected on associated benthic composition parameters; and 3) To use this information to establish the knowledge base necessary for enacting management decisions in a spatial setting. It is critical, with recent changes in land and maritime use in Vieques (i.e., transfer of former Navy lands to the Fish and Wildlife Service, the Municipality in Vieques, and the Puerto Rico Conservation Trust) that action is taken now to accurately describe and characterize the fish/macro-invertebrate populations in these areas. To quantify patterns

of spatial distribution and make meaningful interpretations, we must first have knowledge of the underlying variables determining species distribution. The basis for this work, is the nearshore benthic habitats maps (less than 100 ft depth) created by NOAA's Biogeography Program in 2001 and NOS' bathymetry models. Using ArcView GIS software, the digitized habitat maps are used to select reef/hardbottom habitat that is further stratified by proximity to former land use and geographic side of the island (i.e., north vs. south) to select sampling stations. Sites are randomly selected within these strata to ensure coverage of the entire study region and not just a particular reef. At each site, fish, macro-invertebrates, and benthic composition information is then quantified following standardized protocols. By relating the data collected in the field back to the habitat maps and bathymetric models, the Biogeography Branch is able to model and map species level and community level information. These protocols are standardized throughout the US Caribbean to enable quantification and comparison of reef fish abundance and distribution trends between Vieques and the other locations. Knowledge of the current status of fish/macro-invertebrate communities coupled with longer term monitoring will enable evaluation of management efficacy, thus it is essential to future management actions.

**1.3. Is this a one-time data collection, or an ongoing series of measurements?**

Ongoing series of measurements

**1.4. Actual or planned temporal coverage of the data:**

2007-05 to Present

**1.5. Actual or planned geographic coverage of the data:**

W: -65.62, E: -65.27, N: 18.19, S: 18.07

**1.6. Type(s) of data:**

*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*

**1.7. Data collection method(s):**

*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:**

**1.8.1. If data are from another observing system, please specify:**

**2. Point of Contact for this Data Management Plan (author or maintainer)**

**2.1. Name:**

NCCOS Scientific Data Coordinator

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

National Centers for Coastal Ocean Science

**2.4. E-mail address:**

NCCOS.data@noaa.gov

**2.5. Phone number:****3. Responsible Party for Data Management**

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:**

NCCOS Scientific Data Coordinator

**3.2. Title:**

Data Steward

**4. Resources**

*Programs must identify resources within their own budget for managing the data they produce.*

**4.1. Have resources for management of these data been identified?****4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):****5. Data Lineage and Quality**

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

**5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible**

*(describe or provide URL of description):*

Process Steps:

- 2007-05-01 00:00:00 - Ten strata were developed to encompass two criteria. Five former land use zones were defined, from west to east, as the Naval Ammunition Facility (aka Naval Ammunition Support Detachment), the Civilian Area (CA), the Vieques Naval Training Range (VNTR, includes the Eastern Maneuver Area [EMA] and western portion of the Atlantic Fleet Weapons Training Facility [AFWTF]), the Live Impact Area (LIA), and the Punta Este Conservation Zone (PECZ). The water out to 3 nm off of the land use boundaries was designated as the survey area for a total area of approximately 500 square kilometers. Each zone was further

subdivided into north and south regions for a total of ten strata. The number of sites allocated to each strata was dependent on the amount of hardbottom within the strata, and sites were randomly selected within each strata. Using a handheld GPS unit, the boat captain navigates to previously selected sites. A weighted buoy is dropped to mark any site where "live boating" is necessary. Once on site, divers are deployed and maintain contact with each other throughout the entire census. One diver is responsible for collecting data on the fish communities utilizing the belt transect visual census technique. The belt transect diver obtains a random compass heading prior to entering the water and records the compass bearing (0-360°) on the data sheet. On site, no attempt to avoid structural features within a habitat such as a pile of conch shells, a sand patch or a tire in a seagrass or sand area should be made as these features affect fish communities and are "real" features of the habitats. Visibility at each site must be sufficient to allow for identification of fish at a minimum of 2m away. Once reasonable visibility is ascertained, the diver attaches a tape measure to the substrate and allows it to roll out as progress is made along the chosen compass heading for a distance of 25m. The transect should take 15 minutes regardless of habitat type or number of animals present. This allows more mobile animals the opportunity to swim through the transect, and standardizes the samples collected to allow for comparisons. As the tape rolls out at a relatively constant speed, the diver records all fish species to the lowest taxonomic level possible that come within 2m of either side of the transect. Each survey is 100m<sup>2</sup> in area (25m length X 4m width). To decrease the total time spent writing, four letter codes are used that consist of the first two letters of the genus name followed by the first two letters of the species name. In the rare case that two species have the same four-letter code, letters are added to the species name until a difference occurs. If the fish can only be identified to the family or genus level then this is all that is recorded. If the fish cannot be identified to the family level then no entry is necessary. The number of individuals per species is tallied in 5cm size class increments up to 35cm using visual estimation of fork length. If an individual is greater than 35cm, then an estimate of the actual fork length is recorded. (continued...)

- 2007-05-01 00:00:00 - (continued from above) Prior to 2002, fork lengths of fish greater than 35 cm were not always recorded. Although the habitat should not be altered in any manner by lifting or moving structure, the observer should record fish seen in holes, under ledges and in the water column. To identify, enumerate, or locate new individuals a diver may move off the centerline of the transect as long as they stay within the 4m transect width and do not look back along area already covered. The diver is allowed to look forward toward the end of the transect for the distance left along the transect (i.e. if the diver is at meter 15, he can look 10 meters distant, but if he is at meter 23, he can only look 2 meters ahead). In mangrove areas the diver swims close to the prop roots and looks as far into the mangroves as possible, up to 2m and then out to the edge of the mangrove overhang such that the total area surveyed is still 100m<sup>2</sup>. In this case, some of the survey may necessarily fall on seagrass habitat. This is allowed as the mangrove

habitat is defined as a transition zone habitat. This diver also takes photos of fishes to document color patterns and phases of the different species. (end continuation)

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## **6. Data Documentation**

*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

**6.1. Does metadata comply with EDMC Data Documentation directive?**

No

**6.1.1. If metadata are non-existent or non-compliant, please explain:**

Missing/invalid information:

- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

**6.2. Name of organization or facility providing metadata hosting:**

NMFS Office of Science and Technology

**6.2.1. If service is needed for metadata hosting, please indicate:**

**6.3. URL of metadata folder or data catalog, if known:**

<https://inport.nmfs.noaa.gov/inport/item/39223>

**6.4. Process for producing and maintaining metadata**

*(describe or provide URL of description):*

Metadata produced and maintained in accordance with the NMFS Data Documentation  
Procedural Directive: <http://www.nmfs.noaa.gov/op/pds/documents/04/111/04-111-01.pdf>

## **7. Data Access**

*NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

### **7.1. Do these data comply with the Data Access directive?**

**7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?**

**7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:**

### **7.2. Name of organization of facility providing data access:**

National Centers for Coastal Ocean Science

#### **7.2.1. If data hosting service is needed, please indicate:**

#### **7.2.2. URL of data access service, if known:**

<http://www8.nos.noaa.gov/bpdmWeb/queryMain.aspx>

### **7.3. Data access methods or services offered:**

### **7.4. Approximate delay between data collection and dissemination:**

**7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:**

## **8. Data Preservation and Protection**

*The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.*

### **8.1. Actual or planned long-term data archive location:**

*(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To*

*Be Determined, Unable to Archive, or No Archiving Intended)*

**8.1.1. If World Data Center or Other, specify:**

**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**

**8.2. Data storage facility prior to being sent to an archive facility (if any):**

National Centers for Coastal Ocean Science - Silver Spring, MD

**8.3. Approximate delay between data collection and submission to an archive facility:**

**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**

*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*

## **9. Additional Line Office or Staff Office Questions**

*Line and Staff Offices may extend this template by inserting additional questions in this section.*